

AMENDMENTS

In the Claims:

1. (Currently amended) A touch pad assembly, comprising:
a touch pad having a surface and one or more sensors configured to map the touch pad surface into native sensor coordinates; and
a controller configured to
define one or more logical device units associated with the surface of the touch pad,
receive from the one or more sensors native values associated with the native sensor coordinates,
adjust the native values associated with the native sensor coordinates into new values associated with the logical device units and
report the new values to a host device, the logical device units associated with areas of the touch pad that can be actuated by a user,
the controller configured to pass the native values through a filtering process before reporting the new values to the host device ~~adjusting the native values into new values~~, thereby reducing an amount of data sent to the host.
2. (Previously Presented) The touch pad assembly as recited in claim 1 wherein the filtering process comprises removing redundant or non-essential data.
3. (Previously Presented) The touch pad assembly as recited in claim 1 wherein the filtering process includes determining if the native values are associated with noise events or actual events.
4. (Previously presented) The touch pad assembly as recited in claim 3 wherein the controller is configured to filter out the noise events and allow the actual events to pass.
5. (Previously presented) The touch pad assembly as recited in claim 1 wherein the controller is configured to determine if there is a significant difference between a current native

value and a previously received native value, and to report a new value only when there is a significant difference between the current native value and a previously received native value.

6. (Previously presented) The touch pad assembly as recited in claim 1 wherein the native sensor coordinates comprise Cartesian coordinates.

7. (Previously presented) The touch pad assembly as recited in claim 1 wherein the native sensor coordinates comprise Polar coordinates.

8. (Previously presented) The touch pad assembly as recited in claim 1 wherein the logical device units comprise Cartesian coordinates.

9. (Previously presented) The touch pad assembly as recited in claim 1 wherein the logical device units comprise Polar coordinates.

10. (Previously presented) The touch pad assembly as recited in claim 1 wherein the new values of the logical device units are reported in an absolute mode.

11. (Previously presented) The touch pad assembly as recited in claim 1 wherein the new values of the logical device units are reported in a relative mode.

12. (Previously presented) The touch pad assembly as recited in claim 1 wherein the new values of the logical device units are reported in a Cartesian absolute mode, a Cartesian relative mode, a Polar absolute mode or a Polar relative mode.

13. (Previously presented) The touch pad assembly as recited in claim 1 wherein the new values of the logical device units implement a specific control function in the host device.

14. (Previously presented) The touch pad assembly as recited in claim 1 wherein the logical device units comprise angular Polar units distributed around the surface of the touch pad in a clock like manner.

15. (Previously presented) The touch pad assembly as recited in claim 1 wherein the native sensor coordinates and the logical device units define a ratio between about 1024:1 to about 8:1.

16. (Previously presented) The touch pad assembly as recited in claim 1 comprising one or more touch buttons having one or more sensors, wherein the controller is configured to receive a native value from the one or more sensors, determine a button status from the native value, and report the button status to a host device, the button status being used by the host device to implement a button function in the host device.

17. (Previously presented) The touch pad assembly as recited in claim 16 wherein the controller only reports the button status to the host device when there is a change in button status.

18. (Previously presented) The touch pad assembly as recited in claim 1 wherein each of the logical device units is associated with a different movement direction on a display screen of the host device.

19. (Previously presented) The touch pad assembly as recited in claim 1 wherein the host device comprises a media player configured to at least one of store and play media, the media comprising at least one of audio, video and images, the media player comprising a housing configured to support the touch pad assembly, a display configured to display at least one of text and graphics and a CPU configured to receive the new value of the logical device units from the controller and issue commands based on the new value to other components of the media player, the commands enabling at least movement of an object on the display.

20. (Canceled).

21. (Previously presented) The method as recited in claim 26 wherein the control signal includes the native values of the native sensor coordinates.

22. (Previously presented) The method as recited in claim 26 further comprising: adjusting the native values of the native sensor coordinates into new values when a desired event occurs on the touch pad, the control signal including the new values.

23. (Previously presented) The method as recited in claim 26 wherein the new values and the native values are described using identical units.

24. (Previously presented) The method as recited in claim 26 wherein the new values and the native values are described using different units.

25. (Canceled).

26. (Previously Presented) A method comprising:
mapping a touch pad into native sensor coordinates,
producing a native value associated with a native sensor coordinate when at least one of several different types of events occur on the touch pad,
filtering the native value based on the type of event,
generating a control signal based on the native value when a desired event occurs on the touch pad,

wherein the step of filtering comprises determining whether the native value is associated with a noise event or an actual event, filtering a noise event and passing an actual event to a host device, thereby reducing or preventing noise events from reaching the host device, and

wherein the step of determining comprises: comparing a current set of native values with a last set of native values; classifying the current set of native values as noise events when the current set of native values is substantially similar to the previous set of native values; and classifying the

current set of native values as actual events when the current set of native values is significantly different than the previous set of native values.

27. (Previously presented) The method as recited in claim 26 wherein the control signal includes native values associated with the native sensor coordinates if the events are actual events.

28. (Previously presented) The method as recited in claim 26 further comprising: adjusting the native values of the native sensor coordinates into a new value if it is determined that the events are actual events, and including the new value in the control signal.

29-30. (Canceled).

31. (Previously presented) A signal processing method for a controller of a touch pad, comprising:

receiving a current user location,

determining a difference in user location by comparing the current user location and a last user location,

outputting the current user location when the difference in user location exceeds a threshold value,

converting the outputted current user location into a logical device unit, and

generating a message for a host device, the message including the more logical user location, the more logical user location being used by the host device to move a control object in a specified manner,

wherein the threshold value corresponds to the number of sensor levels that need to be changed in the touch pad in order to report a change in the user location and

wherein the threshold is determined by the following equation:

$$\text{Threshold (T)} = C * (\text{native sensor resolution of the touch pad} / \text{logical device resolution of the touch pad}),$$

where

the native sensor resolution represents the maximum number of different user locations detectable by the sensors of the touch pad,

the logical device resolution represents the number of logical device units reported to the host device by the touch pad, and

C defines the width border area between clusters of sensors of the touch pad that define one logical device unit.

32. (Previously presented) The method as recited in claim 31 wherein C has a value between about 0 and 0.5.

33. (Original) The method as recited in claim 31 wherein the native sensor resolution is about 1024 and the logical device resolution is about 128.

34. (Previously presented) The method as recited in claim 31 further comprising: storing the current user location for subsequent processing, the current user location acting as the last user location in subsequent processing.

35. (Currently amended) A system comprising a host device and a touch pad assembly having, a host device and a controller, the controller configured to compare a current set of native values and a prior set of native values and identify the current set of native values as noise events or actual events depending on whether the current set of native values and the prior set of native values are substantially similar and to pass the native values through a filtering process before reporting the new values to the host device ~~adjusting the native values into new values~~, thereby reducing an amount of data sent to the host,

the touch pad assembly being configured to communicate a message to the host device, the message comprising:

an event field identifying whether the message is a touch pad event or a button event;

an event identifier field identifying at least one event parameter, each event parameter having an event value, the event value for a touch pad event parameter indicating an absolute position, the event value for a button event parameter indicating button status.

36. (Currently amended) A touch pad system configured to transform a user action into motion onto a display screen, the touch pad system comprising:

a touch pad whose entire touch sensing surface is divided into a plurality of independent and spatially distinct actuation zones, each of which includes a plurality of sensing nodes of the touch sensing surface, and each of which represents a different control function,

and

a controller configured to compare a current set of native values and a prior set of native values and identify the current set of native values as noise events or actual events depending on whether the current set of native values and the prior set of native values are substantially similar and to pass the native values through a filtering process before reporting the new values to the host device ~~adjusting the native values into new values~~, thereby reducing an amount of data sent to the host.

37. (Previously presented) The touch pad system as recited in claim 36 wherein each of the actuation zones are button zones that represent different movement direction on the display screen so as to enable joystick implementations, multiple dimensional menu selection or photo image panning.

38. (Previously presented) The touch pad system as recited in claim 36 wherein the actuation zones are substantially the same size and shape and include substantially the same number of sensing nodes of the touch sensing surface.

39. (Previously presented) The touch pad system as recited in claim 36 wherein the touch sensing surface is circular, wherein the touch sensing nodes of the touch sensing surface are

positioned at least angularly around the circular touch sensing surface, and wherein the actuation zones are positioned at least angularly around the circular touch sensing surface.

40. (Previously presented) The touch pad assembly as recited in claim 1 wherein the controller is configured to compare a current set of native values and a prior set of native values and identify the current set of native values as associated with noise events or actual events depending whether the current set of native values and the prior set of native values are substantially similar.